

SCIENCE LIBRARY

GENERAL LIBRARY

MAR 23 1920

UNIV. OF MICH.

Vol. 16, No. 9

PSYCHOLOGICAL REVIEW PUBLICATIONS

September, 1919

Psychological Bulletin

EDITED BY

SHEPHERD I. FRANZ, GOVT. HOSP. FOR INSANE

HOWARD C. WARREN, PRINCETON UNIVERSITY (*Review*)

JOHN B. WATSON, JOHNS HOPKINS UNIVERSITY (*J. of Exp. Psych.*)

JAMES R. ANGELL, UNIVERSITY OF CHICAGO (*Monographs*) AND

MADISON BENTLEY, UNIVERSITY OF ILLINOIS (*Index*)

WITH THE CO-OPERATION OF

B. T. BALDWIN, UNIVERSITY OF IOWA; E. B. HOLT, HARVARD UNIVERSITY; W. S. HUNTER, UNIVERSITY OF KANSAS; J. H. LEUBA, BRYN MAWR COLLEGE; MAX MEYER, UNIVERSITY OF MISSOURI; R. M. OGDEN, CORNELL UNIVERSITY; W. D. SCOTT, NORTH-WESTERN UNIVERSITY; E. E. SOUTHARD, BOSTON PSYCHOPATHIC HOSPITAL; G. M. WHIPPLE, UNIVERSITY OF ILLINOIS; R. S. WOODWORTH, COLUMBIA UNIVERSITY.

CHILD AND EDUCATIONAL PSYCHOLOGY NUMBER

Edited by B. T. BALDWIN

CONTENTS

General Reviews and Summaries:

Child Psychology: D. MITCHELL, 299. *Educational Psychology*: C. T. GRAY, 315.

Special Reviews:

Terman's Intelligence: L. WAGONER, 333. *Rusk's Experimental Education*: H. J. PETERSON, 334.

PUBLISHED MONTHLY BY THE

PSYCHOLOGICAL REVIEW COMPANY

NORTH QUEEN ST., LANCASTER, PA.,

AND PRINCETON, N. J.

AGENTS: G. R. STECHERT & CO., LONDON (11 Star Yard, Carey St., W. C.); PARIS (16, rue de Condé)

Entered as second-class matter January 31, 1904, at the post-office at Lancaster, Pa., under
Act of Congress of March 3, 1879

Psychological Review Publications

EDITED BY

HOWARD C. WARREN, PRINCETON UNIVERSITY (*Review*)
JOHN B. WATSON, JOHNS HOPKINS UNIVERSITY (*J. of Exp. Psych.*)
JAMES R. ANGELL, UNIVERSITY OF CHICAGO (*Monographs*)
SHEPHERD I. FRANZ, GOVT. HOSP. FOR INSANE (*Bulletin*)
MADISON BENTLEY, UNIVERSITY OF ILLINOIS (*Index*)
WITH THE CO-OPERATION OF
MANY DISTINGUISHED PSYCHOLOGISTS

PSYCHOLOGICAL REVIEW

containing original contributions only, appears bimonthly, January, March, May, July, September, and November, the six numbers comprising a volume of about 480 pages.

PSYCHOLOGICAL BULLETIN

containing critical reviews, notices of books and articles, psychological news and notes, university notices, and announcements, appears monthly, the annual volume comprising about 480 pages. Special issues of the BULLETIN consist of general reviews of recent work in some department of psychology.

JOURNAL OF EXPERIMENTAL PSYCHOLOGY

containing original contributions of an experimental character, appears bimonthly, February, April, June, August, October, and December, the six numbers comprising a volume of about 480 pages.

PSYCHOLOGICAL INDEX

is a compendious bibliography of books, monographs, and articles upon psychological and cognate topics that have appeared during the year. The INDEX is issued annually in May, and may be subscribed for in connection with the periodicals above, or purchased separately.

ANNUAL SUBSCRIPTION RATES

Review and Bulletin: \$6 (Foreign, \$6.50). **Journal:** \$3.25 (Foreign, \$3.50).
Review and Journal: \$6 (Foreign, \$6.50). **Bulletin:** \$3.25 (Foreign, \$3.50).
Journal and Bulletin: \$6 (Foreign, \$6.50).
Review, Bulletin and Journal: \$9 (Foreign, \$9.75).
Index with any other two: \$7 (Foreign, \$7.50).
Review, Bulletin, Journal and Index: \$10 (Foreign, \$10.75).
Current Numbers: Review, 65c; Bulletin, 35c; Journal, 65c; Index, \$1.25.

PSYCHOLOGICAL MONOGRAPHS

consist of longer researches or treatises or collections of laboratory studies which it is important to publish promptly and as units. The price of single numbers varies according to their size. The MONOGRAPHS appear at irregular intervals and are gathered into volumes of about 500 pages with a uniform subscription price of \$5.50. (Postal Union \$5.80.)

Philosophical Monographs: a series of treatises more philosophical in character.

Library of Genetic Science and Philosophy: a series of bound volumes.

Subscriptions, orders, and business communications may be sent direct to the

PSYCHOLOGICAL REVIEW COMPANY

Princeton, New Jersey

FOREIGN AGENTS: G. E. STECHERT & CO., London (2 Star Yard, Cary St., W. C.)
PARIS (16, rue de Condé)

THE
PSYCHOLOGICAL BULLETIN

GENERAL REVIEWS AND SUMMARIES

CHILD PSYCHOLOGY

BY DAVID MITCHELL

New York City

General Discussions.—The textbook on the Psychology of Childhood by Norsworthy and Whitley (35) is intended for use in normal schools. It contains little that is technically difficult. The responses of "original nature" are indicated, and an outline of the development and modification of these in the child's life is given. Instincts are classified as social and non-social. Children differ from adults in span or range of attention and in "complexity of object." Perception is discussed and the possibility of its improvement through attention. Memory is viewed as a gift of original nature and, therefore, not capable of improvement. The memory of the child is better for isolated facts than is the adult's. Because of this, educators should attempt to fix certain fundamental ideas as a basis for the child's future conduct. In their methods of thinking children also differ. Mechanical adjustments occupy a large portion of a child's time, and thinking is prevented in the child because of the adult's tendency to solve problems for him. The paucity of the supply of accurate facts also prevents a child thinking as an adult. In reference to the formation of habits of learning, various laws are discussed. Regarding play, the different theories are considered and play is defined as an activity without an economic end, and is distinguished by the attitude taken by the individual. One chapter of the discussion is devoted to cross-sections of child-life at ages five and eleven. Measurements of physical, social and mental factors are generally given, and exceptional children are

described from the standpoint of physiology, neurology, and mentality. The book concludes with a delimitation of the field of child psychology, together with an outline of coöperation with other fields.

A general survey of child study is given by Hall (19). After the introductory section treating the different fields and theories of predecessors and contemporaries, the author centers on psychoanalysis, indicating some aspects of psychic content or capability which this method has helped to disclose. The study of various qualities described by James, Freud, and Jung has led to new conceptions of fear, anger, etc. The notions of the egotist and of the altruist, together with the notion of compensation and the maintenance of psychic unity, are considered. According to this author, these psychic mechanisms which have been disclosed by the aid of psycho-analysis are more active in infant years, and a complete understanding of them might save much arrested development.

An *Introduction to Child Psychology* by Waddle (58) is another textbook for normal schools. It is written with the intention of giving general knowledge of the child rather than educational methods or psychological data. An historical account of child study includes a discussion of the various movements, theories, agencies and literature. The reliable methods of studying children are the biographical, clinical and the questionnaire, the latter being less reliable than the others because of the possible suggestibility of the child. Behavior is traced from chemical action to neurone activity. "Non-learning" behavior is described in terms of organic and muscular reflexes, and acts, either instinctive or with an instinctive basis. The pedagogical value of a number of the instincts with their time of appearance and the adaptability for education is indicated. Work and play frequently cannot be distinguished either objectively or subjectively, but play is a better stimulus to growth than work, since it is a response to natural demands. Speech development begins in reflex and involuntary exercises, passes through a period of imitation of sound, and lastly becomes thought expression. The author finds drawing of great value as an expression of the child's innate tendencies, and outlines several dramatic stages which are the scribble, the artistic illusion, and the self-conscious. The reactions of children can only be described as unmoral since they are largely natural or the results of innate tendencies. Juvenile delinquency is attributable to "moral immaturity," as well as to the increasing complexity of modern life. In

the general mental development of the child one must consider certain well-defined capacities, "pre-determined in form and content by the selected mental activity of his forebears."

The contribution by Von Hug-Hellmuth (57) on the mental life of the child traces the development of reasoning and the balance between reality and imagination. The tendency of the first part of the discussion is followed as the author traces the development of certain abilities and ideas of time and space to sex interests. Mistakes in school reading, as well as in inventions and substitutions in speech are indicative of unconscious mental processes in the child.

Lay (28) represents the "new" psychology which is that of the Freudian school. He holds that the unconscious has an important, if not an exclusively controlling influence in the life of the child. Explanatory illustrations are given which reveal mental content other than that in consciousness, and considerable space is devoted to the demonstration of the interrelations of the various combinations of conscious and unconscious thought and action. Mistakes and obstinacies in a child are frequently explainable on this basis. The partial trends of sadism, masochism and exhibitionism with the mechanisms of the new psychology are all explained. Mental life is concerned with external realities, particularly those of reproduction. Those thoughts that are denied their natural form of expression find other outlets. This sublimation may be through music, poetry, etc., as well as through minor habits or reactions. In discussing the theory of compensation, the author says that a display of good mathematical ability is not necessarily a demonstration of a strong innate capacity, but is rather to be understood as an acquisition to disguise the fact, known sub-consciously, that the subject is inferior in this respect. Among these rather fantastic considerations the author brings out one very important point. He says it should be recognized by the teacher that the child cannot give the real reasons for the majority of his acts, and consequently he should not be questioned about them. As an indication of the enormous complexity of the mental life of the child, this book has a valuable function, but should be considered only as suggestive until the experimental evidence is sufficient to warrant the acceptance of many of the conclusions.

Another discussion with the psycho-analytic background is found in *The Mental Hygiene of Childhood* by White (63). Behind action lies interest, and instinctive interest is the basis of the child's

development. The various interests differ in the different stages. Up to five years the pleasure motive controls. At this stage there is an unqualified self-interest. From five years to puberty is designated as the latency period; during this time repressions take place. Shame appears and curiosity is veiled. From puberty to fifteen years of age the increased sexuality causes many of the tendencies of infancy to reappear. At this time three steps in sex development, auto-eroticism, homo-sexualism and hetero-sexualism, occur. Special attention should be given to the tendencies of the second period, since without proper sublimation the stage of hetero-sexuality may never be completely obtained. Various educational problems are treated, but the author apparently did not intend to make his exposition complete. Any method should be based on the instinctive reactions with repression or development of the various phases.

According to Heniger (20) play is the great factor in a child's life, and forms a valuable basis for educational work. The author is particularly interested in the dramatic side and emphasizes the need for possible development along this line. She feels very strongly that children have naturally a keen discriminative appreciation which is often ruined by adults who try to "play down" to a youthful audience.

Exceptional Children.—Campbell (9) cites cases of nervous children and suggests methods of training. Many of the apparently neurotic symptoms are products of a child's experience and not of any neurotic constitution. One child who disliked cereal and eggs would threaten to vomit when urged to take this food. He would make good this threat. The mother unconsciously cultivated these reactions because they formed an outlet for her desire for service. Treatment of the child involved the education of the mother so that she might understand the part which she played in the development of this characteristic. Another child apparently suffered from weakness and nausea. No evidence of gastro-intestinal disorder could be found, and a complete cure was effected by a different type of training. In general, for the nervous child, two conditions are desirable,—a wholesome objective regime, and an atmosphere of frankness. As the author says, "the personality of the child is as complex, if not so richly furnished, as that of the adult."

Blanton (6) studied 6,500 children, five to fourteen years of age, in the *Volksschulen* of Trier. He wished to determine the effect of malnutrition on the physical and mental development. For

this purpose, clinical observations rather than psychological tests were necessary. Interviews with teachers, observations of the child in school, together with certain psychological tests gave the necessary information. The conditions and results are discussed in great detail, but many of the conclusions are subject to criticism. Various factors, other than those which the author ascribes, may be responsible for the conditions noted. Nevertheless, certain important facts are mentioned. Malnutrition was found in 40 per cent. of the children; neuroses, tics and conduct disorders were more frequent. The number of borderline defectives had increased, together with the number of failures in grade promotion. The specific changes in malnourished children were a decrease in nervous energy, inattention, poor comprehension, poor memory, and nervous restlessness. Children of good stock, however, withstand undernourishment for a longer period than those of poor stock.

Montague (31), reporting on cases examined in a children's court, discusses the method of choosing cases and classifies them as normal, retarded mental deficiency, constitutional psychopathic inferior, psychotic, psycho-neurotic, and epileptic. The age of the children varied from six to sixteen years, and the chief conclusion is that the recidivist is the real problem in criminology.

Three types of mental defect are described by Higgins (21). They are the glandular, the syphilitic, and the hookworm. Mental deficiency should be classified according to the etiological basis and prognosis, rather than according to degree. Unscientific classification of the mentally deficient has been in part responsible for the indifference manifested toward its logical treatment. Diagnoses dealing in generalities should no longer be acceptable.

An attempt was made to ascertain the "mental power" in some ungraded classes by Teas (53). The greater number of boys is said to be due to the fact that the boy is less restrained in his activity than the girl, and so comes in conflict with his environment. Certain of the tests used presented specific difficulties, and "it is interesting to note that the test that is largely influenced by training has the lowest number of failures."

Campbell (3) made a survey of 1,281 children, ranging in age from six to sixteen. He discusses the methods of determining the status of the child and holds that mental tests are insufficient. The mental level of success in an environment may depend upon the geographical locality. An examination should include physical, emotional, and social factors.

Truants, incorrigibles, and general offenders are considered in the discussion by Clark (11). For these children who are mostly high-grade feeble-minded, ungraded classes are insufficient. The principles underlying their management should be the same as those for normal children but the interest appeal must be greater. Because of the general backwardness in subjects requiring abstract reasoning these children are thrown into a condition of despair which brings on a pathological state. For such children, expert teachers should be provided, and sport and recreation should be used as an outlet to other activities.

A boy, six years of age, who had a paralyzed right arm, had failed to learn reading and writing in eighteen months at school. According to the writers, Stevens and Russell (51), the child was practically at age, judging by mental tests and his behavior. In eight months, under special training, the child made such progress that he was returned to the grade with the same children from whom he had been separated.

Lacy (27) makes a study of 100 retarded fourth-grade pupils. He grouped them according to social status and found that intellectually the groups were approximately the same. As a group they were behind the normal, but the curves of distribution for these children and a group of normal children overlapped greatly. The conclusion is reached, but hardly justified, that the greatest number of these retarded children have normal intelligence.

The rate of improvement of feeble-minded children is discussed by Murdoch (32). Twenty-one defectives, representing school grades four, five and six, were twice tested, an interval of twelve months elapsing between the two tests. There is a very low correlation between the results of the two tests, but the rate of learning of these children was found to be less than the rate for normal children of the same age level.

Children of superior intelligence are studied by Race (47). The chronological ages of the children ranged from seven years seven months to nine years eight months, and they had intelligence quotients ranging from 120 to 168. According to the teachers, better dispositions and social adjustments were displayed by these children after they had been placed in the class with others of their own mental caliber.

Coy (13) reports a study of a child nine years ten months of age who is doing fifth-grade work. A record of her interesting and more marked responses is given.

The mental standing of the deaf is discussed by Pintner and Paterson (41). Two outstanding facts are presented; first, the startling deficiency of the deaf in their ability to comprehend and handle written and printed language; second, the general mental inferiority of the deaf as a group. Lack of social intercourse is responsible for the language deficiency. The difference between congenitally and adventitiously deaf is studied, and the causes for their difference from the normal in intelligence are discussed. In general it is stated that the deaf child is from two to three years behind the hearing child. Academic training cannot profit the deaf child very much, so industrial training should be emphasized. In motor capacities he is more nearly on an equality with the hearing child.

Speech and Vocabulary.—A report of an experiment in infant education is made anonymously (1), with an introduction by Terman who says that at 26 months of age this child "read from any primer fluently though with babyish pronunciation." The report is written by the father who says he began the experiment with the child at the age of four months at which time she had used her first three words. At 20 months she knew letters and began words. At 21 months she discovered that words meant thoughts and then began to read. At two years of age she had a reading vocabulary of 200 words and at 30 months it had increased to 700.

The Brandenburgs (7) made a record of the conversation for an entire day when the child was 40 and also 52 months old. The number of words and questions, both rational and meaningless, was recorded. Numerous examples are given and a complete list of the words, classified according to parts of speech.

Nice (34) reports on the relation of ambidexterity to delayed speech development. The literature of the subject is reviewed. A full exposition of the case of a man of intellectual family and personal accomplishment who had a history of being left-handed and being trained to use the right is given. Speech disorders resulted. Several other cases are given briefly, but the author concludes that both the conditions of retarded speech development and ambidexterity may be the result of unrevealed causes. She is conscious of the meagerness of her data and suggests further study.

Terman (54) discusses vocabulary as a measurement of intelligence and first meets various objections that have been raised to the use of this test. He considers the quantitative and qualitative treatment of the vocabularies of children ranging in mental

age from five to nineteen years. His conclusion is that the vocabulary test is valuable.

Swift and Hedrick (52) attempt to differentiate the mental make-up of a stutterer from that of non-stutterers. Blanton (5) makes a contribution to the science of mental hygiene in a study of emotional expression in children with special reference to speech. The article is written for parents and teachers but is important also for the physician and psychologist. It has many concrete suggestions for the stimulation of healthy emotional and intellectual growth. According to this discussion defects in speech delicately gauge irregularities in emotional development.

Special Topics.—The original emotions of fear, rage and love are discussed by Watson (60) together with various methods by which the implicit side of emotions may be detected. This study is closely related to previous discussions and should be known by any one who wishes to understand the behavior of a child.

According to Gesell (17) the task of mental hygiene is largely individual, demanding the development of intimate personal methods of diagnosis. The hygiene for children does not begin with school life but with the nursery years. The developmental records should include speech, play, movements and interests, and social traits with any disorders or peculiarities manifested. The school record should include a technique for determining traits of character such as the emotional, volitional, and social, as well as a determination of intelligence rating. An outline of seven possibilities in hygiene is given.

Campbell (10) says that little attention to training in character has so far been given. The instruction has been confined to arithmetic, language, and such other subjects, and has been carried on in groups. Character training, which is training in feeling and doing, must be by the individual method. So far the school has taken an interest in defective eyes and ears, diseased teeth and tonsils, but now the real child must be considered and he is a complex bundle of highly organized instincts, emotions, and attitudes.

Since chronological age has not been sufficient to use as a standard for developmental processes, Zigler (64) says we must now consider the complexity of the varying phases of development. He deals first with physical development and then shows the tendencies and interest which begin at about six years of age. Active and sustained attention is only beginning to function and the sense of judgment is developing. Imagination has reached a climax at five

or six, and during the period up to that time, children are apt to use words without necessarily understanding their meaning. Neuro-muscular development is complete at six years. The author touches upon pathology, morbidity and mortality and gives a bibliography.

A study of the learning process is made by the Hulls (24). Urinary control is the function and detailed data with learning curves are presented. The development of speech is also considered.

Cole (12) attacks the traditional idea of entering children in school at the age of six. Testing children of five and six years, who were in the same grade, he found a very slight difference in mental age and concludes that admission should be by the latter determination, although admitting the unreliability of his results due to the small number of children.

A case report is given of 25 bright children by Gillingham (18). She suggests that instead of encouraging bright children to spend all their time on school subjects, we should emphasize joyous recreation, free play, care of physical condition, and that some of the children's time should be used for music, art and industrial work.

A group of very bright children is described by Specht (50). The children were selected through the use of the Terman Tests and all had an I. Q. of 120 or over. An outline of the curriculum used is given and the statement made that the progress of these children was from one to four grades in a six months period.

The development of a child's imagination is discussed by Nice (33). She gives a detailed study of an eight-year-old girl with an analysis of stimuli and conditions. Illustrative stories are included. Tschudi (56) reports on the wishes and joys of children with a discussion of the effect made on them by teaching.

Barker (3) presents the conventional classification of instincts and sentiments, the latter being very complex things, and described as "feelings related to certain objects." McDougall's four levels of conduct are mentioned. Psychopathic children and mental defectives are the result of heredity. Environment should be considered from the physical, psychic, and social sides. The various factors in these different sides are outlined, and methods of training are suggested. Particular stress is placed on avoiding the development of a feeling of inferiority. Special effort should be made to enable the child to counter-balance either physical or mental defects. The problem of avoiding spoiling the child is biological, medical, psychological, and social.

After a brief historical review of the problems of alexia, Schmitt (48) discusses the theories of causation. She finds the difficulty to be more frequent among boys than girls, and concludes "in view of the fact that ability to read may be developed in these children, the failure of the child is related to the psychology of meaning and association."

In the psychology of special disability in spelling, Hollingworth (22) concerns herself with the processes involved in good spelling and the conditions which accompany special difficulties in this ability. She reviews the literature of the subject and reports an experiment with children who had good general ability but were defective in spelling. The report contains a detailed analysis of difficulties and results.

Ashbaugh (2) twice tested children in spelling to determine the variability in success. A further experiment showed similar results and the author estimates that a series of words presented three times on the same day or consecutive days will result in a 20 per cent. variability.

In reference to the moral discipline of children Wells (62) discusses the recapitulation theory as applied to the religious beliefs of children during the stages up to adolescence. There are three stages of religious development,—the primitive, the morality and the redemptive. The author believes that the God of external authority and law is needed to influence the conduct and discipline, so that when a child has reached the age of reason he has established habits of conduct.

Twelve photographs of children from four to fourteen years of age were used by Pintner (40) as a basis for estimating intelligence. Judgments were made by physicians, psychologists, teachers, students, and others. They arranged the photographs in order of rank according to intelligence, but the lack of unanimity is such as to lead one to place little confidence in the result.

Horn (23) presents a full description of the characteristics of a 12-year-old boy who seems to have been partly deaf from birth and who had developed extreme abstraction from his surroundings. No conclusions are reached and no solution is offered for overcoming the difficulty.

Experimental Studies.—Pintner (39) investigated the "community of ideas" of several groups of people including 119 school children of 12 years and younger. He reports: "In general the characteristics of the children are the same as those of the adults,

except that the percentages for the most frequent words are generally not quite so large, while the percentage of failure is larger."

Esper (14) experimented on analogy. Associations were taken and a time record made for children from nine to thirteen years of age as well as for other subjects. In 51 to 85 per cent. of the cases the responses are words of the same category, that is, adjective responses to adjectives, numerals to numerals. The variation or "scattering" of response is the least in children. This is contrary to the findings of Ziehen and Watt.

The correlation of immediate and delayed recall is considered by Gates (16). After presenting evidence from various authorities, the author discusses the method of testing subjects, believing that it has in some way predetermined the results. A description of the method of procedure and results are presented. The conclusion is that correlation rather than compensation is the rule. This conclusion is in accord with Meuman's, and opposed to those who insisted that speedy learning is compensated for by rapid forgetting, and vice versa.

By means of immediate and delayed recall Paterson (38) finds that objects were remembered better than written names, and written names better than spoken. From a memory test with digits the author concludes that memory increases with age rather than with intelligence. He discusses various types of errors and found that they represented stages in the failing of the memory image. Maximum memory power is reached at an early age, the result for the seventh-year grammar grade being almost the same as that for several years later.

The children of a Hebrew Orphan Asylum were the subjects for the study by Berliner (4), of esthetic judgments. She used sixteen postal cards, illustrating rhymes and songs for children. Girls were found to agree more closely in esthetic judgment than boys, but boys agree more in their dislikes and likes.

Shore (49) devised a picture completion test which he claims contains the equivalent of the Binet Test for color, form, comprehension, similarities and absurdities. He also claims that it tests the ability measured by the Trabue Scales. He used 90 children of ages eight to twelve and presents a table of median scores and time records. "The test is proposed as one of a series of performance tests to supplement those now in common use."

Another picture test was devised by Lindley (29) and given to 70 children of mental ages from six to eleven and to 88 public-

school children. The average number of mistakes decreases with age, but the children of the two groups differed in their method of procedure and in their qualitative aspects. The test may be valuable because the language element is small, but it requires an ability to see relationships.

Weinbridge and Gabel (61) used a series of cards for a multiple choice experiment. There were fifteen choices planned and the child was requested to select the right card when the arrangements were made in exactly the same way in any given series. The number of trials necessary for the child to learn the order of placing is used as the score. Conclusions are lacking except a recommendation for further work.

Lowell (30) has attempted a very laudable performance in selecting 25 tests for group purposes, which will fulfill the conditions of clear and brief directions, allowing only one correct response, having simplicity of material with ease and quickness of distribution. His subjects were 904 school children whose ages ranged from five to ten years. The chief points are: the provision of a measuring scale for large groups of young children and a more accurate index of the intelligence than is provided through Binet individual results.

Another attempt to construct a group scale suitable to children of the elementary grades was made by Otis (36). The scale was used with 121 children and the method of procedure for obtaining equality of increments of ability is described.

The Presseys (44) formulate a group test of intelligence so arranged that 90 per cent. of third grade children can pass some of the tests and that not all of high school children would be successful. Many different types of tests are included and the statement is made: "If the tests were the measure of the results of schooling rather than general intelligence, the norms would be more similar for the grades than the age."

In another article (45) these authors report the use of this scale in attempting to determine its efficiency in separating the feeble-minded and the superior children from the total population of a school. Of 48 gifted and subnormal children otherwise selected, 42 were correctly graded by the scale. In reference to the individual tests it is said that rote memory and logical memory tests do not differentiate well, while analogies, opposites, logical selection, and moral classification give the most reliable results.

A study to discover sex differences was made by Pressey (43)

with 1,300 girls and 1,200 boys, ranging in age from eight to sixteen years. It is found that the central tendency of general intelligence for girls is at every age slightly higher than for the boys. The author studied further 880 children to discover sex differences in special abilities. Girls were found to be better in rote memory and literary tests, while boys were superior in arithmetic and practical information. It was considered that the differences were marked enough to be regarded in general intelligence tests.

A directions test is presented by Pintner and Toops (42), one part being suitable for children six to eight years of age, and the other for children seven to thirteen years of age. From the two scales a single one was constructed which would differentiate subjects from six years of age to "superior adults." Tentative norms and the method of scoring are given for this new test.

Paschal (37) used the Witmer Cylinder Test with children as young as six years. He describes the construction of the test, methods of procedure, and scoring. His conclusion is that the shortest time trial is the best quantitative measurement of performance ability. Qualitative differences, however, were found in the performances of different mental types.

Ide (25) worked with kindergarten children to determine the age level for the Witmer Formboard and Cylinders, discussing their clinical value, the earliest passing age, the causes of failure and the value as tests of educability. Details of procedure are given and statistical results for boys and girls of different nationalities and different ages.

The formboard is studied as an educational device by Kephart (26) who made an analysis of failures and a study of a subject who had performed the test with a minimum amount of teaching. His procedure and score are described in detail. The child taught was slightly more than twelve months of age when the experiment began and was 32 months old when he was able to complete the performance. In analyzing failures it is said little, if any, relation was shown between age, formboard time, diagnostic rating, and diagnosis. Practically all failures are due to some form of inattention.

Wallin (59) describes his peg formboard tests and gives the method of procedure and results obtained for children of ages varying from three to eight years. The test consists of four boards with six pegs in each, some boards having the same shaped pegs, and others two or three different shapes. The test is said to be adapt-

able to children from one and a half or two years to six years of age, and the series would seem to be a valuable supplement to the scale of performance tests presented by Pintner and Paterson.

A serial test of intelligence was worked out by Terman and Chamberlain (55), the aim being to devise a scale which might be used both as a point and a mental age scale. There were 23 tests and the 41 children selected were those whose school records and Binet ratings were available. The authors hope that this scale may be used for group testing.

A study of mental ability in 2,000 children by means of tests of logical and rote memory, learning ability, free and controlled association, and completion, was made by Pyle and Collings (46). Results were compared with those obtained from children in small cities. The conclusions presented are; that city children on the average are of better stock, and that mental development is hastened by the city environment, but the author is not sure that the rural community studied was typical.

In a study of the relation of mental and chronological age Evans and Castle (15) wished to consider the assumption that a twelve-year-old child with nine-year mentality will react like a normal nine-year-old child. A comparison was made between children whose chronological and mental ages were the same and those whose chronological age and mental age differed. Various tests which were classified as those of mental ability and maturity, gave results which seemed to show that the former contained the real tests of differences which underlie school work.

REFERENCES

1. ANONY. An Experiment in Infant Education. *J. of Appl. Psychol.*, 1918, 2, 219-228.
2. ASHBAUGH, E. E. Variability of Children in Spelling. *School & Society*, 1919, 9, 93-98.
3. BARKER, L. F. How to Avoid Spoiling the Child. *Mental Hygiene*, 1919, 3, 240-252.
4. BERLINER, A. Aesthetic Judgments of School Children. *J. of Appl. Psychol.*, 1918, 2, 229-242.
5. BLANTON, M. G., & S. *Speech Training for Children: The Hygiene of Speech*. New York: Century Co., 1919. Pp. 261.
6. BLANTON, S. Mental and Nervous Changes in the Children of the Volksschulen of Trier, Germany, Caused by Malnutrition. *Mental Hygiene*, 1919, 3, 343-386.
7. BRANDENBURG, G. C. & J. Language Development During the Fourth Year, (The Conversation). *Ped. Sem.*, 1919, 26, 27-40.
8. CAMPBELL, C. M. A City District and Its Subnormal Children. *Mental Hygiene*, 1918, 2, 232-244.

9. CAMPBELL, C. M. Nervous Children and Their Training. *Mental Hygiene*, 1919, 3, 16-23.
10. CAMPBELL, C. M. Education and Mental Hygiene. *Mental Hygiene*, 1919, 3, 398-408.
11. CLARK, L. P. A Consideration of Conduct Disorders in the Feeble-minded. *Mental Hygiene*, 1918, 2, 23-33.
12. COLE, L. W. The Mental Age and School Entrance. *School & Society*, 1918, 8, 418-419.
13. COY, G. Mentality of a Gifted Child. *J. of Appl. Psychol.*, 1918, 2, 229-307.
14. ESPER, E. A. Contribution to the Experimental Study of Analogy. *Psychol. Rev.*, 1918, 25, 469-487.
15. EVANS, J. E. & CASTLE, M. Relation of Mental Age to Chronological Age as Determined by Certain Individual and Group Tests. *J. of Appl. Psychol.*, 1918, 2, 308-322.
16. GATES, A. I. Correlations of Immediate and Delayed Recall. *J. of Educ. Psychol.*, 1918, 9, 489-496.
17. GESELL, A. Mental Hygiene and the Public Schools. *Mental Hygiene*, 1919, 3, 4-10.
18. GILLINGHAM, A. The Bright Child and the School. *J. of Educ. Psychol.*, 1919, 10, 237-252.
19. HALL, G. S. A General Survey of Child Study. *Ped. Sem.*, 1918, 25, 308-318.
20. HENIGER, A. M. H. *Kingdom of the Child*. New York: Dutton, 1918. Pp. xiv + 173.
21. HIGGINS, W. H. Three Types of Mental Defect. *Ungraded*, 1918, 3, 99-103.
22. HOLLINGWORTH, L. S. *The Psychology of Special Disability in Spelling*. New York: Columbia University, 1918. Pp. vi + 105.
23. HORN, J. L. A Case of Pathological Day Dreaming. *Psychol. Clinic*, 1918, 7, 89-101.
24. HULL, C. L. & B. T. Parallel Learning Curves of an Infant in Vocabulary and in Voluntary Control of the Bladder. *Ped. Sem.*, 1919, 26, 272-283.
25. IDE, G. G. The Witmer Formboard and Cylinders. *Psychol. Clinic*, 1918, 12, 65-88.
26. KEPHART, A. P. Clinical Studies of Failures with the Witmer Formboard. *Psychol. Clinic*, 1918, 11, 229-253.
27. LACY, W. I. A Study of 100 Retarded Fourth Grade Pupils Tested by the Binet Scale. *Psychol. Clinic*, 1918, 12, 16-23.
28. LAY, W. *The Child's Unconscious Mind*. New York: Dodd, Mead, 1919, Pp. 329.
29. LINDLEY, M. A Picture Test. *Training School Bull.*, 1918, 14, 156-161.
30. LOWELL, F. A Group Intelligence Scale for Primary Grades. *J. of Appl. Psychol.*, 1919, 3, 215-247.
31. MONTAGUE, H. Second Annual Report of the Psychopathic Clinic of the Children's Court of New York. *Mental Hygiene*, 1919, 3, 650-669.
32. MURDOCH, K. Rate of Improvement of the Feeble-minded as Shown by Standard Educational Tests. *J. of Appl. Psychol.*, 1918, 2, 243-249.
33. NICE, M. M. A Child's Imagination. *Ped. Sem.*, 1919, 26, 173-201.
34. NICE, M. N. Ambidexterity and Delayed Speech Development. *Ped. Sem.*, 1918, 25, 141-162.
35. NORSWORTHY, N. & WHITLEY, M. T. *The Psychology of Childhood*. New York: Macmillan, 1918. Pp. viii + 375.

36. OTIS, A. S. An Absolute Point Scale for Group Measurement of Intelligence. *J. of Educ. Psychol.*, 1918, 9, 239-261, 333-348.
37. PASCHAL, F. C. A Report on the Standardization of the Witmer Cylinder Test. *Psychol. Clinic*, 1918, 12, 54-59.
38. PATERSON, T. L. Pedagogical Suggestions from Memory Tests. *J. of Educ. Psychol.*, 1918, 9, 497-510.
39. PINTNER, R. Community of Ideas. *Psychol. Rev.*, 1918, 25, 402-410.
40. PINTNER, R. Intelligence as Estimated from Photographs. *Psychol. Rev.*, 1918, 25, 286-296.
41. PINTNER, R. & PATERSON, D. C. Some Conclusions from Psychological Tests of the Deaf. *Volta Rev.*, 1918, 20, 10-19.
42. PINTNER, R. & TOOPS, H. A. A Revised Directions Test. *J. of Educ. Psychol.*, 1918, 9, 123-142.
43. PRESSEY, L. W. Sex Differences Shown by 2544 School Children on a Group Scale of Intelligence with Special Reference to Variability. *J. of Appl. Psychol.*, 1918, 2, 323-340.
44. PRESSEY, L. W. & S. L. A Group Point Scale for Measuring General Intelligence. *J. of Appl. Psychol.*, 1918, 2, 250-269.
45. PRESSEY, L. W. & S. L. The Practical Efficiency of a Group Scale of Intelligence. *J. of Appl. Psychol.*, 1919, 3, 68-80.
46. PYLE, W. H. & COLLINGS, P. E. The Mental and Physical Development of Rural Children. *School & Society*, 1918, 8, 534-539.
47. RACE, H. A Study of a Class of Children of Superior Intelligence. *J. of Educ. Psychol.*, 1918, 9, 91-98.
48. SCHMITT, C. Development of Alexia: Congenital Word-Blindness or Inability to Learn to Read. *Element. Sch. J.*, 1918, 680-700, 757-769.
49. SHORE, E. A. A New Picture Completion Test. *J. of Appl. Psychol.*, 1918, 2, 355-365.
50. SPECHT, L. F. A Terman Class in Public School 64, Manhattan. *School & Society*, 1919, 9, 393-398.
51. STEVENS, H. C. & RUSSELL, L. C. A Retarded Pupil Resorted to Grade. *Psychol. Clinic*, 1918, 9, 271-275.
52. SWIFT, W. B. & HEDRICK, J. A Note on Mental Peculiarities as Symbols in Stuttering. *J. of Appl. Psychol.*, 1918, 2, 89-91.
53. TEAS, E. M. A Report of a Survey of the Children in the Ungraded Classes in the Borough of the Bronx. *Ungraded*, 1918, 3, 75-82, 104-107.
54. TERMAN, L. M. The Vocabulary as a Measurement of Intelligence. *J. of Educ. Psychol.*, 1918, 9, 452-466.
55. TERMAN, M. & CHAMBERLAIN, M. B. Twenty-Three Serial Tests of Intelligence and Their Intercorrelations. *J. of Appl. Psychol.*, 1918, 2, 341-354.
56. TSCHUDI, R. *Das Proletarische Kind*. Zurich: Füssli, 1919. Pp. 36.
57. VON HUG-HELLMUTH, H. A Study of the Mental Life of the Child. *Psychoanal. Rev.*, 1918, 5, 291-322; 398-427; 1919, 6, 65-88.
58. WADDLE, C. W. *Introduction to Child Psychology*. New York: Houghton Mifflin, 1918. Pp. xv + 317.
59. WALLIN, J. E. W. The Peg Formboard Tests. *Psychol. Clinic*, 1918, 12, 40-53.
60. WATSON, J. B. A Schematic Outline of the Emotions. *Psychol. Rev.*, 1919, 26, 165-196.
61. WEINBRIDGE, E. R. & GABEL, P. Multiple Choice Experiment Applied to School Children. *Psychol. Rev.*, 1919, 26, 294-299.

62. WELLS, W. R. The Theory of Recapitulation and Moral Discipline of Children. *Amer. J. of Psychol.*, 1918, 29, 371-382.
63. WHITE, W. A. *The Mental Hygiene of Childhood*. Boston: Little, Brown, 1919. Pp. xv + 193.
64. ZIGLER, M. J. The Child and School Entrance. *Ped. Sem.*, 1918, 25, 23-57.

EDUCATIONAL PSYCHOLOGY

BY C. TRUMAN GRAY

University of Texas

The survey of the literature in educational psychology given below warrants the following general statements:

(1) The interest in educational tests continues. This is evidenced by a considerable number of new tests and scales and by the large amount of work which has been done with the old scales. Numerous attempts have been made to refine, to criticize, and to modify the existing tests and scales so that more accurate results may be obtained with them. (2) There is a rapidly growing interest in general intelligence tests as a basis for educational procedure. (3) Considerable attention is being given to educational diagnosis and prognosis. (4) The detailed methods of the laboratory prevail in a number of studies. (5) The general problems involved in memory, imagination and other forms of mental activity are treated in but few articles.

I. TEXTBOOKS

The only text devoted entirely to educational psychology which has appeared is by Starch (143). According to the preface, the author has attempted to pick out those problems which are most relevant in their relation to education and to deal with them from a strictly scientific standpoint. The book divides itself into three parts. Part I deals with the native equipment of human beings, Part II is concerned with the psychology of learning in general, and Part III treats of learning as exhibited in the various elementary school subjects.

Part I is made somewhat brief because the author thinks that too much emphasis is usually given to the topics under this heading, and because the experimental data upon them are somewhat limited. The discussions in Part II are the usual ones. It is in Part III that the author has departed from tradition by bringing together a

body of material not usually included in books of this kind. It is to be noted that this part includes only discussions of elementary school subjects. It seems that the work would have made a wider appeal if a treatment of a few high-school subjects had been given. Other objections which might be made to the text are minor ones and there is no doubt but what it brings together a body of material which is more distinctly educational in its nature and more usable in its form than any book which has appeared. The reviews which have come to notice are favorable and the text will, doubtless, have a wide use.

Judd's text (83) for introductory courses in education is an attempt to break away from the traditional first courses in education. It is the result of several years' experimentation with the author's classes and brings together a wide range of topics. Those chapters which are of interest at this time treat of play, individual differences, periodicity in the pupil's development, and standardization. The general problem which the author has attacked is a vital one, and other social sciences are making attempts to meet it in their respective fields. The book should receive the careful consideration of all those who are charged with the responsibility of giving introductory courses.

Bobbitt's text on *The Curriculum* (16) will be of interest to psychologists. This author divides educational experiences into those which are upon a play-level and those which are upon a work-level. A very careful and detailed distinction between the two types of activities is drawn in terms of the ends reached by each. A later chapter is given over to a discussion of the function of play in human life. According to this discussion, it is the business of play to fill the gaps in human life which are left by work. Other chapters which may be given special mention are those concerned with ideas in their relations to work-experiences, and scientific methods in curriculum making. The book is stimulating and will bear study. It should have a wide use in educational courses which relate to the curriculum and in reading circle work.

A text entitled *Measuring the Results of Teaching* has been written by Monroe (105). The work is very similar to one which appeared some time ago with the present author as a co-author. The chief difference between the two books lies in the fact that the later one gives more attention to the determination of defects in the abilities required by the various school subjects than did

the earlier text. This fact makes the book of greater value to teachers in service. It will also find use in courses upon tests and measurements and in reading circle work.

Parker's text on elementary school methods (118) has in its second part much that is psychological in character. The chapters of this part treat such topics as "How Children Learn," "Apperception," "Preparation," "Interest," "Drill and Practice," and "Individual Differences." The treatment is intended, according to the preface, to be elementary. It is, at the same time, thoroughly accurate and scientific. The book will find ready use wherever the applied psychology of the above topics is required.

A very timely volume is by Hall-Quest on *The Textbook* (62). Psychologists will be interested in his chapters on the selection and judgment of textbooks, and on the use of the textbook by students.

Terman's book entitled *The Intelligence of School Children* (155) is an attempt to set forth in simple language the many facts concerning individual differences and methods for dealing with different grades of mental ability by means of mental tests. His discussion of the superior child should be read by every teacher.

A third edition of Rusk's *Experimental Education* (138) has recently appeared. Some of the later literature upon the topics treated in the book has been included.

A volume by Peters (123) upon *Human Conduct* should also be mentioned. The attempt has been made to bring together a body of material suitable for high school students.

2. MONOGRAPHS

Courtis' report upon the Gary Schools (38) is one of the most thoroughgoing pieces of scientific work which has been done in the field of measurements. The classroom products which have been treated are handwriting, spelling, arithmetic, English composition, and reading. The report may well be divided into three sections. Each of the chapters has a division which gives only the essential and significant data collected upon the topic at hand. A second part of each chapter is devoted to a critical discussion of the various factors which enter into the measuring process. At the end of the volume are appendices which contain directions for scoring, record sheets, etc. The student of education will find in section two of each chapter a considerable amount of interesting material. The careful manner in which the conclusions are stated will serve as a model for investigations in education.

The Eighteenth Yearbook (115) is devoted to a discussion of economy in learning. The chapters are given over to a consideration of this topic as it relates to different elementary school subjects. Each one is devoted to a summary of the scientific material in a particular subject. These summaries are of such a nature as to give the teacher a definite set of rules for her procedure.

A number of monographs have appeared in the series issued by Teachers College, Columbia University. Most of these are devoted to problems in educational measurements and involve statistical methods. These may be considered briefly as follows:

1. Holtz (74) has devised two scales in first-year algebra. Both scale A and scale B are divided into five parts as follows: Addition and subtraction, multiplication, equation and formula, written problems and graphs. The various problems comprising the tests have been carefully evaluated by well-accepted methods.

2. A contribution to educational diagnosis with reference to the individual has been made by Buckner (24). The work is based upon eleven different tests. A part of these are in school subjects, while others are such as the opposites test, direction test, etc. The results involve three different phases: (1) Individual variability as compared with group variability. (2) Extreme variability of individual cases. (3) Correlations between the results for the various tests. His conclusion is that such tests can be used in a satisfactory manner for diagnostic work.

3. The overlapping of attainments in certain grades has been investigated by Kruse (89). In many studies where a single test has been used, a large amount of overlapping has been found. The present author uses a series of tests instead of one. He comes to the conclusion that the error in using single tests as a basis for determining overlapping is great, and that the present grading system places children fairly well.

4. Fretwell (50) has made a study in educational prognosis. The work is based upon results from a series of tests and from teachers' marks. The conclusion is reached that the use of the tests which took only a small amount of time at the beginning of the year agreed with the classification of the teachers after they had taught the children for one year, except in five cases where thirty pupils in a class is used as a basis for the estimate. Another important phase of the investigation had to do with the rating of various tests for the purpose of prognosis. The four most valuable, in order of their importance, are the reading test, the visual vocabulary test, the opposites test, and the spelling test.

5. Rogers (136) has also made a study of prognosis by means of mathematical tests.

6. An investigation upon improvement in relation to different distributions of practice time has been made by Cummins (40). In one case the practice periods were kept equal, while in the other they were reduced from day to day. Practice was given in learning French vocabularies, geographical, and historical facts, single-column addition, and short division. Four different experiments were tried. Some of these were carried out under the conditions of the elementary school. In most cases, the advantage was with the schedule in which the time was gradually reduced.

7. Hollingsworth's (72) study of defects in spelling ability is a type of work, the need of which is very much felt in educational psychology. It is concerned only with normal children who are deficient in this one subject. The defects are analyzed by elaborate methods and remedial measures prescribed. The literature upon the topic is treated.

Three monographs are at hand from the laboratory of the School of Education, University of Chicago. Each of these is in the nature of a laboratory investigation. The first to be mentioned is by Judd, (84) upon the nature and development of reading. Some of the most interesting chapters are concerned with determining characteristics of adult's and of children's reading. This comparison is done by means of eye-movement records. Another important chapter has to do with experiments in training poor readers.

Freeman's (49) monograph on handwriting gives results for the first attempt at using motion picture records in the study of handwriting movements. The apparatus was of such a nature as to allow thirty exposures for each second. The records were later projected, one by one, upon the material written and thus a detailed record of the movement for any letter or word was built up. In this manner, very distinct differences were found between the records of good and poor writers. The volume closes with a discussion of an experiment in training children in handwriting.

The third volume from this laboratory is a study of left-handedness, by Beeley (11). The main part of the treatment is given over to a discussion of a test for handedness. In this connection, several well-known tests, such as the steadiness tests were tried out but were found unsatisfactory. The test which was devised is in the nature of a tracing test. The results show it to be satisfactory in diagnosing handedness.

A valuable compilation of material has recently appeared as numbers five to nine of the current volume of the *Psychological Clinic* (132). It is in the nature of a reference book for clinical psychology. Many valuable suggestions are given upon diagnostic teaching. While the volume has been prepared ostensibly to guide those who are concerned primarily with subnormal children, yet an understanding of such methods and devices will be helpful to other teachers.

Garth (54) has prepared a monograph on fatigue. His subjects include 368 children. The mental operations involved are those required in simple addition. His conclusions are that slow workers fatigue more quickly than the more rapid workers and that the slowest and most rapid workers show greatest variability.

Tidyman's (161) manual for spelling deals with five different problems, as follows: (1) The content of spelling texts, (2) the psychology of spelling, (3) the pedagogy of spelling, (4) spelling tests and scales, (5) bibliography.

Richardson's (135) volume devoted to the psychology and pedagogy of anger should be mentioned in this connection.

3. VARIOUS FORMS OF MENTAL ACTIVITY

Emotions.—Some experiments upon this type of mental activity have been conducted by Buysman (27). The method used was to ask questions of such a nature that the child's ability to identify emotions was tested. An article entitled "A Child's Imagination" has been contributed by Nice (116).

Learning.—Speed in relation to accuracy has been studied by Broome, Spett, and Myers (23). The whole method of learning, as compared with the part method has been investigated by Pechstein (122). Other phases of this topic which are dealt with in various articles are curves of work, Garth (53), the constancy of the capacity to learn, Pyle (130), and learning based upon diagnosis, Scott (140).

Memory.—Logical memory in relation to school grades has been treated by King and Haman (87) and "Pedagogical Suggestions from Memory Tests" is the title of an article by Patterson (120).

Transfer of Training.—The relation of mathematics, of the classics, and of history to the training of the mind has been dealt with by Moore (110) and by Valentine (170). A summary of many of the experiments upon this problem has been made by Young (185). This article by a mathematician is very interesting. He concludes that the experiments support the doctrine of formal

discipline. Other phases of this problem have been discussed by Bode (17), Davidson (43), and Moritz (111).

Reasoning.—The development, and measurement of this ability has been treated by Burt (26) and Herring (68).

4. CERTAIN EDUCATIONAL PROBLEMS

Academic Guidance.—This topic is made the subject of an article by Harap (63).

Adolescence.—King has discussed the changes in adolescence (86). Other problems of a similar nature have been treated by Reymert (134).

Characteristics of Children.—At least two attempts have been made to apply the methods of measurement to certain general characteristics of child life. One of these, as reported by Smith, (141), suggests scales for the study of children's characteristics and an editorial in the *School Review* (3) compares two types of reports which are to be made by teachers upon this same general problem.

Distribution and Correlation of Abilities.—Studies made upon this topic may be listed as follows: (1) Correlation of Reading Ability with Grades in High School, Smith (142); (2) Relation of English and Mathematical Abilities in College Students, Tolman (163); Age and Grade Distribution of Rural Children, Phelps (124), and The Influence of Practice upon Correlation, Stickland (149).

Educational Diagnosis.—An article which may well be placed under this heading has been published by Whitney (177).

Elimination and Retardation.—Articles upon various phases of these problems have appeared by Rowse (137), Cooper (35), Toops and Pintner (164), Pickle and Winkelbleck (125), and Bixler (13).

General Intelligence Tests in Their Relation to Educational Procedure.—This topic is receiving a great deal of attention at the present time. Reports of the use of such tests have been made from the following institutions: (1) Brown University, by Colvin (33), Hamline University, by Walcott (174), (3) Southern Methodist University, by Hunter (77), (4) University of Illinois, by Hill (70), (5) University of Minnesota Medical School, by Haggerty (61), (6) Northwestern University, by Uhl (167), and (7) Dickinson College, by Filler (48). In this same connection, an article by Van Wagenen (172) treats of the mental development of college students.

The use of intelligence tests in elementary and high schools has been reported upon by Madson and Sylvester (96), Pressey (128), and Van Wagenen (173). Another very interesting contribution along this line is an intelligence test for children of the first grade of the elementary school by the Myers (114). A general discussion of the use of intelligence tests for determining fitness for college entrance has been made by Thurston (160), and the use of such tests in supervision is made the basis of an article by Samm (139).

Most, if not all, of these reports and discussions are of such a nature as to lead to the opinion that there is here a field which will receive a great deal of attention in the near future.

"Individual Differences as Found Among Fifth Grade Children" is the title of an article by Hubbard (76).

Kindergarten Education.—The problems of measurement as they relate to the kindergarten have been discussed by Abbott (1) and Temple (154).

Mental Ability of Particular Classes.—Special studies of rural children, and comparisons of Jews and Gentiles have been made by Mullan (113), Pyle and Collings (129), and Grier (59). Mention should also be made of a study of negro children reported by Mitchell, Rosanoff, and Rosanoff (104).

Pedagogy of Education Courses.—Contributions on this important subject have been made by Wilson (180), Andress (4) and Woody (184).

Precocious and Retarded Children.—Precocious children have been reported upon by Coy (39) and retarded children by Lloyd and Ullrich (93), Merrill (101), Renshaw (133), Stevens (148), and Connor (34).

Surveys.—Use of various tests for the purpose of making surveys has been made by Fullegar (51), Theisen (156 and 158), Todd (162), Childs (31), and a similar use has been reported in the University of North Carolina Record (169).

Supervised Study.—A critical evaluation of this type of work, as done by high school students, has been made by Breed (21). His results show that not in all cases is the advantage with supervised study when it is compared with other types of study. Other discussions of the topic have been contributed by Burr (25), Holley (71), Merriman (102), and Willett (178). Mention may also be made at this time of an article by Heck (66) which compares home work and school work.

School Grades.—Contributions to the various phases of this problem have been made by Chambers (30), Davis (42), Inglis (78), Jaggard (80), Johnson (82), and Zerbe (186).

Teaching Ability.—This important topic continues to be a source of interest to a considerable number of investigators. "The Relation between Scholarship and Success in Teaching" is the title of an article by Payne (121). A problem similar to this has been studied by Moody (108). A practical plan of rating teachers in a school system is suggested by Twiss (166), and a score card method for the same purpose has been discussed by Landsittel (91). Other important topics have been treated by Bradley (18), Clarke (32), Morton (112), Davis (41), and Ballou (9).

Textbooks.—A score card for judging textbooks has been devised by Stoops (150).

Visual Instruction.—This type of instruction has been dealt with in an article by James (81).

5. ELEMENTARY AND HIGH-SCHOOL SUBJECTS

Algebra.—Practical uses of scales in algebra have been reported by Cawl (28) and a plan for the classification of pupils in this subject has been discussed by Taylor (153).

Arithmetic.—Uses of tests in this subject have been reported by the Bureau of Research in Boston (5). A series of diagnostic tests have been devised by Monroe (106), and the diagnostic value of the Woody test has been discussed by Theisen and Flemming (157). An evaluation of different methods of subtraction has been made by McClelland (97). Other articles have been contributed by Garfinkel (52), Fairbanks (47), Ballard (8), Wise (181), Mead and Johnson (100), Knoche and Evans (88), Kallom (85), and Moore (109).

Art and Drawing.—The appreciation of pictures as shown by children has been reported upon by Pintner (126), and the ability of children in art courses is treated in an article by Whitford (176).

Biology.—The range of information test has been used in this subject by both Grier (58) and Downing (45). Downing (44) has also discussed what tests in science should do, and Van Cleave (171) has compared the grades in zoölogy by high-school students with the grades made in the first year of the university. A study of the interest of girls in physiology courses has been made by Gruenberg (60).

Chemistry.—A preliminary test in this subject has been suggested

by Webb (175). An article by Bell (12) treats of the attainments of high-school pupils in this study.

English.—Various aspects of the measurement problem, as it relates to English composition have been treated by Gordon (55), Parker (119), Courtis (36), Pintner (127), Towne (165), and by the Boston Department of Educational Measurements (46). Brandenburg (20) has discussed the psychological aspects of language, and different methods of teaching composition have been compared by Thompson (159). In addition to the above work, two articles by Lyman (94, 95) have appeared. One of these is upon certain factors which enter into English composition, and the second is concerned with a coöperative investigation in ninth-grade English. Ability in letter writing has been investigated by Barthelmess (10).

Geography.—Scales in this subject have been reported by Lackey (90) and Witham (183). The Hahn-Lackey scale has been used by Mathewson (98) and mistakes of children in geography have been investigated by Taylor (152).

Geometry.—Irwin (79) reports a very interesting investigation in this subject. His work has to do with the derivation of a test for the mental manipulation of space relations. Minnick (103) has presented the results of his earlier investigation in this subject in the form of a scale. Another article by Courtis (37) is concerned with the measurement of high school mathematics.

Handwriting.—An analytical scale in this subject has been devised by Lister and Myers (92), and a score card for measuring this school product has been reported by Reavis and Aikin (131). A scale has also been devised by Starch (146). A later article by the same author (144) reports a revision of this scale. Other investigations have been made by Almack (2), Mead (99), and Starch (145).

Latin.—Only one article on this subject has appeared. This is by Blanchard (14) upon the value of Latin.

Music.—Very important contributions upon the determination of ability in this school subject have been made by Seashore (168) and (115).

Reading.—The Monroe Silent Reading Tests have been made the basis for two articles. One of these by Monroe (107) is a report upon their general nature and derivation, and the other, which is concerned with the scoring of the tests is by Witham (182). The value of reading tests in improving instruction has been in-

vestigated by Gray (57), and the reliability of reading tests has been investigated by Starch (147). An extensive report upon the status of reading in the Indianapolis public schools has been made by Gray (56), and Bobbitt (15). Other contributions upon this school subject have been made by Heilman (67) and Hayes (65).

Spelling.—A new scale in this subject has been devised by Ashbaugh (6). Various problems have been reported upon as follows: An evaluation of methods, Zirbes (187), various factors in the spelling process, Brierley (22), and Brandenburg (19), the psychological examination of poor spellers, Hollingsworth (73), value of derived forms in spelling, Horn and Ashbaugh (75), variations in spelling ability, Ashbaugh (7), and suggestions upon the giving of the Springfield spelling list, Hill (69). Further studies relating to this subject have been published by Heilman (67) and Nifenecker (117), and Chadsey (29).

Religious Growth.—A very interesting attempt by Hartshorne (64) has been made to apply the methods of measurement to religious growth.

In addition to the above uses of tests two articles have appeared upon more general phases of the problem. One of these by Swift (151) treats of tests for the use of the teacher and the other by Wilson (179) deals with the proper content of a test.

REFERENCES

1. ABBOT, J. W. What Educational Results of the Kindergarten May Not Be Measured. *Kinder. & First Gr.*, 1919, 4, 224-226.
2. ALMACK, J. C. The Writing Ability of Teachers. *School & Soc.*, 1919, 10, 389-390.
3. Analytical Reports of the Characteristics of High-School Pupils. *Sch. Rev.*, 1918, 26, 131-133.
4. ANDRESS, J. M. Pupils' Opinions as to the Relative Worth of Different Methods of Teaching Educational Psychology. *Ped. Sem.*, 1919, 26, 254-271.
5. *Arithmetic*. School Document No. 5, 1918, Boston Public Schools, Dept. of Educational Investigation and Measurement. Pp. 38.
6. ASHBAUGH, E. J. *Iowa Spelling Scale*. Extension Division Bulletin No. 53, Grades II, III, and IV. Pp. 20. Bulletin No. 54, Grades IV, V, and VI. Pp. 20. Bulletin No. 55, Grades VI, VII, and VIII. Pp. 18. Iowa City, Iowa: University of Iowa, 1919.
7. ASHBAUGH, E. J. Variability of Children in Spelling. *School & Soc.*, 1919, 9, 93-98.
8. BALLARD, P. B. Norms of Performance in Simple Oral Arithmetic. *J. of Exper. Ped.*, 1918, 4, 236-238.
9. BALLOU, F. W. *A Plan for the Promotion of Teachers from Merit Lists*. Bulletin No. XIV of the Dept. of Educational Investigations and Measurement. Boston, Mass., 1918. Pp. 63.

10. BARTHELMESS, H. M. *Determining the Achievement of Pupils in Letter Writing.* Bulletin No. XVI of the Dept. of Educational Investigation and Measurement: Boston, Mass., 1918. Pp. 35.
11. BEELEY, A. L. *An Experimental Study of Left Handedness.* (Supp. Educ. Mon., 2, No. 2.) Chicago: Univ. of Chicago Press, 1918. Pp. viii + 74.
12. BELL, J. C. A Study of the Attainments of High-School Pupils in First-Year Chemistry. *Sch. Sci. & Math.*, 1918, 18, 425-432.
13. BIXLER, E. A. The Educational History of a Sixth-grade Group. *School & Soc.*, 1918, 8, 149-150.
14. BLANCHARD, M. E. The Need to Define Anew the Values of Latin. *School & Soc.*, 1918, 8, 215-220.
15. BOBBITT, F. Reading in the Elementary Schools of Indianapolis, V and VI: The Reading Materials. *Elem. Sch. J.*, 19, 665-688, 741-761.
16. BOBBITT, F. *The Curriculum.* Boston: Houghton, Mifflin, 1918. Pp. viii + 295.
17. BODE, B. H. A Reinterpretation of Transfer of Training. *Sch. Admin. & Sup.*, 1919, 5, 105-112.
18. BRADLEY, A. J. H. A Study of the Relative Importance of the Qualities of a Teacher and Her Teaching in Their Relation to General Merit. *Educ. Admin. & Sup.*, 1918, 4, 358-363.
19. BRANDENBURG, G. C. Some Possible Secondary Factors in Spelling Ability. *School & Soc.*, 1919, 9, 632-636.
20. BRANDENBURG, G. C. Psychological Aspects of Language. *J. of Educ. Psychol.*, 1918, 9, 313-332.
21. BREED, F. S. Measured Results of Supervised Study. *Sch. Rev.*, 1919, 27, 186-204, 262-284.
22. BRIERLEY, S. S. Analysis of the Spelling Process. *J. of Exper. Ped.*, 1918, 4, 239-254.
23. BROOME, M., SPETT, A., & MYERS, G. C. Speed vs. Accuracy in Learning. *School & Soc.*, 1918, 8, 687-690.
24. BUCKNER, C. A. *Educational Diagnosis of Individual Pupils.* (Columbia Contrib. to Educ., No. 98) New York: Columbia University, 1919. Pp. ix + 93.
25. BURR, A. W. Directed Study. *Sch. Rev.*, 1919, 27, 90-100.
26. BURT, C. The Development of Reasoning in School Children. *J. of Exper. Ped.*, 1919, 5, 68-77.
27. BUYSMAN, H. C. Some Experimental Tests in Primary Emotions. *Child-Study*, 1919, 12, 7-10.
28. CAWL, F. R. Practical Uses of an Algebra Standard Scale. *School & Soc.*, 1919, 10, 88-90.
29. CHADSEY, C. E. The Spelling Problem. *Sch. Admin. & Sup.*, 1919, 5, 217-218.
30. CHAMBERS, G. G. Some Applications of Mathematics to Educational Statistics. *The Math. Tr.*, 1918, 10, 169-174.
31. CHILDS, H. G. *An Investigation of the Reorganization Movement in the Grammar Grades of Indiana Public Schools.* Bloomington, Ind.: Indiana University Book Store, 1918. Pp. viii + 187.
32. CLARKE, W. F. Teacher Qualifications Sought by Superintendents. *Sch. Bd. J.*, 1918, 28, 56-57.
33. COLVIN, S. S. Psychological Tests at Brown University. *School & Soc.*, 1919, 10, 27-30.

34. CONNOR, W. L. Psychology in the Ungraded Room of the Village School. *J. of Educ. Psychol.*, 1919, 10, 163-165.
35. COOPER, H. E. Another Study of Retardation. *Educ. Admin. & Sup.*, 1919, 5, 177-183.
- ✓ 36. COURTIS, S. A. The Value of Measurements. *The Eng. J.*, 1919, 8, 208-217.
- ✓ 37. COURTIS, S. A. The Measurement of High School Mathematics. *Sch. Sci. & Math.*, 1918, 18, 507-526.
38. COURTIS, S. A. *Measurement of Class-room Products*. New York: General Education Board, 1919. Pp. xxii + 532.
39. COY, C. L. The Mentality of a Gifted Child. *J. of Appl. Psychol.*, 1918, 2, 299-307.
40. CUMMINS, R. A. *Improvements and the Distribution of Practice*. (Col. Univ. Cont. to Education. No. 97.) New York: Columbia University, 1919. Pp. vi + 72.
41. DAVIS, C. O. Problems Involved in Practise Teaching. *School & Soc.*, 1919, 10, 143-148.
42. DAVIS, C. O. The Continuity of Students' work in High School and University, and the Extent of Concentration and Dispersion of Effort Within the University. *School & Soc.*, 1918, 8, 57-60.
43. DAVIDSON, P. Concerning Mental Discipline and Educational Reform. *School & Soc.*, 1918, 7, 1-8.
44. DOWNING, E. R. What Standard Tests in Science Should Do. *Sch. Sci. & Math.*, 1919, 19, 651-654.
45. DOWNING, E. R. A Range of Information Test in Science. *Sch. Sci. & Math.*, 1919, 19, 228-233.
46. *English*. School Document, No. 6, 1918, Boston Public Schools, Dept. of Educational Investigation and Measurement. Pp. 35.
47. FAIRBANKS, G. M. Teaching the Three R's to Our Children. *Training Sch. Bull.*, 1918, 14, 42-44.
48. FILLER, M. G. A Psychological Test. *School & Soc.*, 1919, 10, 208-209.
49. FREEMAN, F. M. *The Handwriting Movement—A Study of the Motor Factors of Excellence in Penmanship*. (Supp. Educ. Monog. 2, No. 3.) Chicago: University of Chicago, 1918. Pp. xvi + 164.
50. FRETWELL, E. K. *A Study in Educational Prognosis*. (Columbia Univ. Contrib. to Educ., No. 99.) New York: Columbia Univ., 1919. Pp. 55.
51. FULLEGAR, J. J. Pedagogical Survey of a Scotch School. *J. of Exper. Ped.*, 1918, 4, 300-304.
52. GARFINKEL, M. A. The Effect of the Summer Vacation on Ability in the Fundamentals of Arithmetic. *J. of Educ. Psychol.*, 1919, 10, 44-47.
53. GARTH, T. R. Work Curves. *J. of Educ. Psychol.*, 1919, 10, 277-285.
54. GARTH, T. H. *Mental Fatigue*. (Columbia Contrib. to Phil. & Psychol.) New York: Columbia Univ., 1918. Pp. ix + 85.
- ✓ 55. GORDON, K. A Class Experiment with the Hillegas Scale. *J. of Educ. Psychol.*, 1918, 9, 511-514.
56. GRAY, W. S. Reading in the Elementary Schools of Indianapolis. *Elem. Sch. J.*, 1919, 19, 336-353, 419-444, 506-531, 608-627.
57. GRAY, W. S. The Use of Tests in Improving Instruction. *Elem. Sch. J.*, 1918, 19, 121-142.
58. GRIER, N. M. The Range of Information Tests in Biology. II. Zoölogy. *J. of Educ. Psychol.*, 1918, 9, 388-392.

59. GRIER, N. M. Comparative Mentality of Jews and Gentiles. *Ped. Sem.*, 1918, 25, 432-433.
60. GRUENBERG, B. C. What Girls Want to Know. *Sch. Rev.*, 1918, 26, 750-758.
61. HAGGERTY, M. E. Tests of Applicants for Admission to University of Minnesota Medical School. *J. of Educ. Psychol.*, 1918, 9, 278-286.
62. HALL-QUEST, A. L. *The Text-Book*. New York: Macmillan, 1918. Pp. xiv + 265.
63. HARAP, H. A Course in Academic Guidance for College Students. *School & Soc.*, 1918, 8, 145-147.
64. HARTSHORNE, H. Measurements of Growth in Religion. *Relig. Educ.*, 1919, 14, 148-155.
65. HAYES, S. P. *Report of Preliminary Tests in Reading*. Publ. Penn. Institution for Instruction of the Blind, 1918, 1. Pp. 20.
66. HECK, W. H. Comparative Tests of Home Work and School Work. *J. of Educ. Psychol.*, 1919, 10, 153-162.
67. HEILMAN, J. D. *A Study in Spelling and A Study of the Mechanics of Reading*. Colorado State Teachers College Bulletin, 1918, Greeley, Colorado.
68. HERRING, J. P. Measurements of Some Ability in Scientific Thinking. *J. of Educ. Psychol.*, 1918, 9, 535-558.
69. HILL, D. S. Standardized Illustrative Sentences for the Springfield Spelling List. *J. of Educ. Psychol.*, 1919, 10, 285-291.
70. HILL, D. S. Results of Intelligence Tests at the University of Illinois. *School & Soc.*, 1918, 9, 542-545.
71. HOLLEY, C. E. The Study Schedules of a Class of College Students. *School & Soc.*, 1919, 10, 178-179.
72. HOLLINGSWORTH, L. S. *The Psychology of Special Disability in Spelling*. (Columbia Univ. Contrib. to Educ., No. 88.) New York: Columbia University, 1918. Pp. vi + 105.
73. HOLLINGSWORTH, L. S. The Psychological Examination of Poor Spellers. *Teachers Coll. Record*, 1919, 20, 126-132.
74. HOLTZ, H. G. *First Year Algebra Scales*. (Columbia Univ. Contrib. to Educ., No. 90.) New York: Columbia University, 1918. Pp. 87.
75. HORN, E. & ASHBAUGH, E. J. The Necessity of Teaching Derived Forms in Spelling. *J. of Educ. Psychol.*, 1919, 10, 143-152.
76. HUBBARD, O. S. Some Individual Differences Among the Pupils of Two Fifth Grade Classes. *Educ. Admin. & Sup.*, 1918, 4, 245-260.
77. HUNTER, H. T. Intelligence Tests at Southern Methodist University. *School & Soc.*, 1919, 10, 437-440.
78. INGLIS, A. Reliability of Grading by the College Entrance Examination Board. *Educ. Admin. & Sup.*, 1918, 4, 95-98.
79. IRWIN, H. N. A Preliminary Attempt to Devise a Test of the Ability of High-School Pupils in the Mental Manipulation of Space Relations. *Sch. Rev.*, 1918, 26, 600-605, 654-670, 759-772.
80. JAGGARD, G. H. Improving the Marking System. *Educ. Admin. & Sup.*, 1919, 5, 25-35.
81. JAMES, B. B. A Comparative Study of Visual Instruction in the High School. *School & Soc.*, 1918, 7, 235-239.
82. JOHNSON, R. H. The Coefficient Marking System, *School & Soc.*, 1918, 7, 714-716.

83. JUDD, C. H. *Introduction to the Scientific Study of Education*. Chicago: Ginn, 1918. Pp. xii + 333.
84. JUDD, C. H. *Reading: Its Nature and Development*. (Supp. Educ. Monog., 2, No. 4.) Chicago: Univ. of Chicago, 1918. Pp. xiv + 192.
85. KALLOM, A. W. The Importance of Diagnosis in Educational Measurements. *J. of Educ. Psychol.*, 1919, 10, 1-12.
86. KING, I. Changes in Adolescence. *Educ. Rev.*, 1918, 56, 19-27.
87. KING, I. & HOMAN, T. B. Logical Memory and School Grades. *J. of Educ. Psychol.*, 1918, 9, 262-269.
88. KNOCHE, F. E. & EVANS, J. E. The Effect of Special Drill in Arithmetic as Measured by the Woody and the Courtis Arithmetic Tests. *J. of Educ. Psychol.*, 1919, 10, 263-277.
89. KRUSE, P. J. *The Overlapping of Certain Grades*. (Columbia Univ. Contrib. to Educ., No. 92.) New York: Columbia University, 1918. Pp. 91.
90. LACKEY, E. E. A Scale for Measuring the Ability of Children in Geography. *J. of Educ. Psychol.*, 1918, 9, 443-451.
91. LANDSITTEL, A. F. C. Score Card Method of Teacher Rating. *Educ. Admin. & Sup.*, 1918, 4, 297-309.
92. LISTER, C. C. & MYERS, G. C. An Analytical Scale of Handwriting. *J. of Educ. Psychol.*, 1918, 9, 417-431.
93. LLOYD, S. M., & ULLRICH, O. A., JR. The Progress of Pupils in an Ungraded Class. *Psychol. Clinic*, 1918, 11, 276-287.
94. LYMAN, R. L. Fluency, Accuracy, and General Excellence in English Composition. *Sch. Rev.*, 1918, 26, 85-100.
95. LYMAN, R. L. Co-operative Investigations in Ninth Grade English. *Sch. Rev.*, 1919, 27, 325-344.
96. MADSEN, I. N. & SYLVESTER, R. H. High School Students' Intelligence Ratings According to the Army Alpha Test. *School & Soc.*, 1919, 10, 407-410.
97. MCCLELLAND, W. W. An Experimental Study of the Different Methods of Substraction. *J. of Exper. Ped.*, 1918, 4, 293-299.
98. MATHEWSON, C. A. A Preliminary Note on the Use of the Hahn-Lackey Geography Scale. *J. of Educ. Psychol.*, 1918, 9, 467-470.
99. MEAD, C. D. The Effect of Exempting Pupils Proficient in Handwriting. *J. of Educ. Psychol.*, 1919, 10, 219-229.
100. MEAD, C. D. & JOHNSON, C. W. Testing Practice Material in the Fundamentals of Arithmetic. *J. of Educ. Psychol.*, 1918, 9, 287-297.
101. MERRILL, M. The Ability of the Special Class Children in the "Three R's." *Ped. Sem.*, 1918, 25, 88-96.
102. MERRIMAN, E. D. Technique of Supervised Study. *Sch. Rev.*, 1918, 26, 35-38.
103. MINNICK, J. H. A Scale for Measuring Pupils Ability to Demonstrate Geometrical Theorems. *Sch. Rev.*, 1919, 27, 101-109.
104. MITCHELL, I., ROSANOFF, I. R. & ROSANOFF, A. J. A Study of Association in Negro Children. *Psychol. Rev.*, 1919, 26, 354-359.
105. MONROE, W. S. *Measuring the Results of Teaching*. Boston: Houghton, Mifflin, 1918, Pp. xviii + 297.
106. MONROE, W. S. A Series of Diagnostic Tests in Arithmetic. *Elem. Sch. J.*, 1918, 19, 585-607.
107. MONROE, W. S. Monroe's Standardized Silent Reading Tests. *J. of Educ. Psychol.*, 1918, 9, 303-312.

108. MOODY, F. E. The Correlation of the Professional Training with Teaching Success of Normal-School Graduates. *Sch. Rev.*, 1918, 26, 180-198.
109. MOORE, R. C. The Psychology of Number. *J. of Exper. Ped.*, 1918, 4, 221-236.
110. MOORE, E. C. Does the Study of Mathematics Train the Mind Specifically or Universally? *School & Soc.*, 1918, 7, 754-764.
111. MORITZ, R. E. Mathematics as a Test of Mental Efficiency. *School & Soc.*, 1918, 7, 59-60.
112. MORTON, R. L. Qualities of Merit in Secondary Teachers. *Educ. Admin. & Sup.*, 1919, 5, 225-238.
113. MULLAN, E. H. *Mental Status of Rural School Children*. Washington: Reprinted from the U. S. Health Reports, November 17, 1916.
114. MYERS, C. E. & MYERS, G. C. A Group Intelligence Test. *School & Soc.*, 1919, 10, 355-360.
115. *National Society for the Study of Education, Eighteenth Year Book, Part II*. Bloomington, Ill.: Pub. Sch. Pub. Co., 1919. Pp. 123.
116. NICE, M. M. A Child's Imagination. *Ped. Sem.*, 1919, 26, 173-201.
117. NIFENECKER, E. A. *Report on Some Measurements in Spelling in Schools of the Borough of Richmond, City of New York*. New York: Dept. of Educ., Div. of Ref. & Research, 1918. Pp. 88.
118. PARKER, S. C. *General Methods of Teaching in Elementary Schools*. Chicago: Ginn, 1919. Pp. xviii + 332.
- ✓ 119. PARKER, F. E. The Value of Measurements. *The Eng. J.*, 1919, 8, 203-208.
120. PATTERSON, T. L. Pedagogical Suggestions from Memory Tests. *J. of Educ. Psychol.*, 1918, 9, 497-510.
121. PAYNE, E. G. Scholarship and Success in Teaching. *J. of Educ. Psychol.*, 1918, 9, 217-219.
122. PECHSTEIN, L. A. Whole Versus Part Methods in Learning Nonsensical Syllables. *J. of Educ. Psychol.*, 1918, 9, 381-387.
123. PETERS, C. C. *Human Conduct*. New York: MacMillan, 1918. Pp. 430.
124. PHELPS, C. L. Study of 292 Rural Schools of California with Reference to Age-Grade Distribution and Other Educational Conditions. *Educ. Admin. & Sup.*, 1918, 4, 199-208.
125. PICKELL, F. G. & WINKELBLECK, B. F. Elimination from the Public Secondary Schools of U. S. *Sch. Rev.*, 1918, 26, 18-24.
126. PINTNER, R. Aesthetic Appreciation of Pictures by Children. *Ped. Sem.*, 1918, 25, 216-218.
- ✓ 127. PINTNER, R. The Measurement of Progress in Language Ability. *J. of Educ. Psychol.*, 1918, 9, 270-277.
128. PRESSEY, S. L. A Comparison of Two Cities and their School Systems by Means of a Group Scale of Intelligence. *Educ. Admin. & Sup.*, 1919, 5, 53-62.
129. PYLE, W. H. & COLLINGS, P. E. The Mental and Physical Development of Rural Children. *School & Soc.*, 1918, 8, 534-539.
130. PYLE, W. H. Is Individual Learning Capacity Constant for Different Types of Material. *J. of Educ. Psychol.*, 1919, 10, 121-129.
131. REAVIS, W. C. & AIKIN, N. J. The Use of a Score Card in Measuring Hand-writing. *Elem. Sch. J.*, 1918, 19, 36-40.
132. Reference Book in Clinical Psychology and for Diagnostic Teaching. *Psychol. Clinic*, 1919, 12, 145-286.
133. RENSHAW, S. The Abilities of Pupils in Detroit Prevocational Classes. *J. of Educ. Psychol.*, 1919, 10, 83-94.

134. REYMERT, M. L. Ueber Persönlichkeitsideale im höheren Jugendalter. *Zsch. für Päd. Psychol.*, 1918, 19, 10-28.
135. RICHARDSON, R. F. *The Psychology and Pedagogy of Anger*. Baltimore: Warwick & York, 1918. Pp. 100.
136. ROGERS, A. L. *Experimental Tests of Mathematical Ability and Their Prognostic Value*. (Columbia Univ. Contrib. to Educ., No. 89.) New York: Columbia University, 1918. Pp. 118.
137. ROWSE, E. J. The Father's Occupation as a Factor of Elimination. *School & Soc.*, 1918, 8, 187-194.
138. RUSK, R. R. *Experimental Education*. New York: Longmans Green, 1919. Pp. 346.
139. SAAM, T. Intelligence Testing as an Aid to Supervision. *Elem. Sch. J.*, 1919, 20, 26-32.
140. SCOTT, C. A. An Eighth Grade Demonstration Class and the Three R's. *J. of Educ. Psychol.*, 1919, 10, 189-218.
141. SMITH, E. R. Scales for the Study of Children's Characteristics. *The Math. Teacher*, 1919, 12, 10-16.
142. SMITH, B. M. Correlation of Ability in Reading with the General Grades in High School. *Sch. Rev.*, 1919, 27, 493-511.
143. STARCH, D. *Educational Psychology*. New York: Macmillan, 1919. Pp. ix + 473.
- ✓ 144. STARCH, D. A Revision of the Starch Writing Scale. *School & Soc.*, 1919, 10, 498-499.
- ✓ 145. STARCH, D. Methods in Constructing Handwriting Scales. *School & Soc.*, 1919, 10, 328-329.
146. STARCH, D. A Scale for Measuring Handwriting. *School & Soc.*, 1918, 9, 154-158, 184-188.
147. STARCH, D. The Reliability of Reading Tests. *School & Soc.*, 1918, 8, 86-90.
148. STEVENS, H. C. A Retarded Pupil Restored to Grade. *Psychol. Clinic.*, 1918, 11, 271-275.
149. STICKLAND, G. I. The Influence of Practice on the Correlation of Abilities. *J. of Educ. Psychol.*, 1918, 9, 393-399.
150. STOOPS, R. O. The Use of Score Cards for Judging Textbooks. *Sch. Bd. J.*, 1918, 56-57, 21-22.
151. SWIFT, G. C. Standard Tests for Teachers' Use. *School & Soc.*, 1918, 8, 117-118.
152. TAYLOR, E. G. R. Children's Mistakes in Geography. *J. of Educ.*, 1918, 50, 322-323.
153. TAYLOR, J. F. The Classification of Pupils in Elementary Algebra. *J. of Educ. Psychol.*, 1918, 9, 361-380.
154. TEMPLE, A. What Educational Results of the Kindergarten May Be Measured? *The Kinder & First Grade*, 1919, 4, 220-224.
155. TERMAN, L. M. *The Intelligence of School Children*. Boston: Houghton, Mifflin, 1919.
156. THEISEN, W. W. *A Report on the Use of Some Standard Tests*. Madison, Wis.: State Department of Public Instruction, 1918.
157. THEISEN, W. W. & FLEMMING, C. W. The Diagnostic Value of the Woody Arithmetic Scales: A Reply. *J. of Educ. Psychol.*, 1918, 9, 475-488.
158. THEISEN, W. W. *An Educational Survey of Jonesville, Wisconsin*. Madison, Wis.: State Department of Public Instruction, 1918. Pp. 329.

159. THOMPSON, C. J. A Study of the Socialized Versus the Academic Method of Teaching Written Composition. *Sch. Rev.*, 1919, 27, 110-133.
160. THURSTONE, L. L. Mental Tests for College Entrance. *J. of Educ. Psychol.*, 1919, 10, 129-143.
161. TIDYMAN, F. W. *The Teaching of Spelling*. Yonkers, N. Y., World Book Co., 1918. Pp. ix + 178.
162. TODD, J. W. Preliminary Curtis Tests in North Dakota. *School & Soc.*, 1918, 9, 65-68.
163. TOLMAN, E. C. English and Mathematical Abilities of a Group of College Students. *J. of Educ. Psychol.*, 1919, 10, 95-103.
164. TOOPS, H. A. & PINTNER, R. Mentality in its Relation to Elimination from School. *School & Soc.*, 1918, 7, 507-510.
165. TOWNE, C. F. Making a Scale for the Measurement of English Composition. *Elem. Sch. J.*, 1918, 19, 41-53.
166. TWISS, G. R. A Plan for Rating the Teachers in a School System. *School & Soc.*, 1918, 9, 749-756.
167. UHL, W. H. Mentality Tests for College Freshmen. *J. of Educ. Psychol.*, 1919, 10, 13-28.
168. *University of Iowa Studies in Psychology, No. VII.* (Psychological Monographs. 25, No. 2, 1918.) Pp. 163.
169. *Comparative Results of a Statewide Use of Standard Tests and Measurements.* Chapel Hill, N. C.: Univ. of N. Carolina, 1918. Pp. 24.
170. VALENTINE, C. W. Classics, History, and the Training of Reasoning. *J. of Exper. Ped.*, 1918, 4, 280-289.
171. VAN CLEAVE, H. J. The Influence of High School Biological Courses upon Grades of University Freshmen in Zoölogy. *Sch. Sci. & Math.*, 1918, 18, 483-491.
172. VAN WAGENEN, M. J. Has the College Student Reached his Mental Maturity when He Enters College? *School & Soc.*, 1918, 9, 663-666.
173. VAN WAGENEN, M. J. Our Schools As Measured by the Army Tests. *Educ. Admin. & Sup.*, 1919, 3, 163-176.
174. WALCOTT, G. D. Mental Testing at Hamline University. *School & Soc.*, 1919, 10, 57-60.
175. WEBB, H. A. A Preliminary Test in Chemistry. *J. of Educ. Psychol.*, 1919, 10, 36-43.
176. WHITFORD, W. G. Empirical Study of Pupil Ability in Public School Art Courses, Part I. *Elem. Sch. J.*, 1919, 20, 32-46.
177. WHITNEY, F. L. How Grade Pupils Feel Toward their Studies. *School & Soc.*, 1918, 8, 118-120.
178. WILLETT, G. W. Supervised Study in High School. *Sch. Rev.*, 1918, 26, 259-272.
179. WILSON, G. M. The Proper Content of A Standard Test. *Elem. Sch. J.*, 1918, 19, 375-381.
180. WILSON, L. M. Psychology in Teacher Training Courses. *Educ. Admin. & Sup.*, 1918, 4, 467-478.
181. WISE, C. T. A Survey of Arithmetical Problems Arising in Various Occupations. *Elem. Sch. J.*, 1919, 20, 118-136.
182. WITHAM, E. C. Scoring the Monroe Silent Reading Tests. *J. of Educ. Psychol.*, 1918, 9, 516-518.

183. WITHAM, E. C. Standard Geography Test. *J. of Educ. Psychol.*, 1918, 9, 432-442.
184. WOODY, C. The Teaching of Educational Measurements. *Educ. Admin. & Sup.*, 1919, 5, 7-14.
185. YOUNG, J. W. A. Concerning Experiments to Test the Transfer of Training. *Sch. Sci. & Math.*, 1918, 18, 1-10, 130-138.
186. ZERBE, J. L. Personal Judgements as a Factor in Grading. *Sch. Sci. & Math.*, 1918, 18, 405-417.
187. ZIRBES, L. An Experimental Evaluation of Method in Spelling. *Elem. Sch. J.*, 1918, 19, 778-798.

SPECIAL REVIEWS

The Intelligence of School Children. How Children Differ in Ability. The Use of Mental Tests in School Grading and the Proper Education of Exceptional Children. LEWIS M. TERMAN. New York: Houghton Mifflin, 1919. Pp. xxii + 313.

This book is written for three classes of readers: grade teachers, normal school students, and parents. The purpose is to show the wide range of individual differences in school children and the educational significance of this variation. The author bases his conclusions on investigations carried on by his graduate students. Much of this material has been published in previous studies.

The results of intelligence tests indicate that throughout the grades there is a great overlapping of mental ages. Unless the mental ability of a child is compared with that which may be expected from one of his age, this overlapping is not apparent. Since school success is unavailable as a criterion of ability in the kindergarten and first grade, mental tests are of especial value at that period. Mental age offers an index of the grade in which a child will be able to do work of average quality, which is much less subject to error than the teacher's estimate; its relation to chronological age forms a fairly reliable basis for prediction of development and school progress. Innate differences are, to a large degree, responsible for retardation. Elimination is selective, leaving pupils of greater ability.

Experimental studies of one hundred superior children lead the writer to conclude that ability is general rather than special and is marked in moral and personal traits; superiority appears early and is permanent; it is a family characteristic. For such children "opportunity classes" are advocated because they offer not only rapid progress but enrichment and broadening of the curriculum, as well as an atmosphere which is intellectually stimulating.

At the present time, tests are valuable in vocational guidance not as a means for determining choice of occupation but rather as an indication of mental ability suitable for successful pursuit of a given employment. The importance of "conservation of talent" is emphasized and the burden of educational guidance is placed on the teacher.

LOVISA WAGONER

UNIVERSITY OF IOWA

Experimental Education. R. R. RUSK. New York: Longmans, Green, 1919. Pp. 342.

This volume is a new edition, completely revised and rewritten of the author's *Introduction to Experimental Education*. Like its predecessor it is admittedly based upon Meumann's *Vorlesungen zur Einführung in die Experimentelle Pädagogik* although many references are made to our best American investigators. The work has been enlarged by the addition of three chapters including modern tendencies in considering the higher mental processes in children, the economy and technique of learning, and the psychology of additional school subjects.

That the books typify different periods in the history of experimental education is shown by brief statements from the respective editions. "This work (1914) seeks to make accessible in convenient form for English readers the main results of investigations in the new subject of experimental education." The author then proceeds, throughout his book, to justify the experimental method in studying educational problems in apparent anticipation of a somewhat general distrust of it. But with assurance he states in the last edition that "experimental education has within a brief period established its claim to be regarded as an independent science. . . . 'We have now reached a point in educational enlightenment where opposition to the scientific method must be frankly pronounced a prejudice.'"

In general the book may be divided into three divisions: (a) The purposes and methodology of experimental education, (b) general physical and mental development of the child, and (c) the psychology and pedagogy of the school subjects.

The author states that "in the future we shall . . . have to talk less of the teaching process and more of the learning process, and for guidance in method we shall have to depend on the psychology of learning instead of on 'formal steps' and the logical analyses of knowledge."

H. J. PETERSON

UNIVERSITY OF IOWA

